

5 May 2008

# Congressional

## Committee on Transportation and Infrastructure

The following is our prepared testimony for the US House of Representatives Committee on Transportation and Infrastructure.

### Mr. Ryan Todd

Ryan Todd is an oil analyst at Deutsche Bank, covering major US oil and gas companies as well as independent refiners. Prior to his employment at Deutsche Bank, he was employed as a reservoir engineer with ExxonMobil.

## Industry

### Table of contents

Section heading.....	Page 00
Section heading.....	Page 00
Section heading.....	Page 00
Section heading.....	Page 00
Section heading.....	Page 00

### Research Team

#### Paul Sankey

Research Analyst  
(+1) 212 250-6137  
paul.sankey@db.com

#### Ryan Todd

Research Associate  
(+1) 212 250-8529  
ryan.todd@db.com

### Deutsche Bank Securities Inc.

All prices are those current at the end of the previous trading session unless otherwise indicated. Prices are sourced from local exchanges via Reuters, Bloomberg and other vendors. Data is sourced from Deutsche Bank and subject companies.

Deutsche Bank does and seeks to do business with companies covered in its research reports. Thus, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report.

Investors should consider this report as only a single factor in making their investment decision.

Independent, third-party research (IR) on certain companies covered by DBSI's research is available to customers of DBSI in the United States at no cost. Customers can access this IR at <http://gm.db.com>, or call 1-877-208-6300 to request that a copy of the IR be sent to them.

**DISCLOSURES AND ANALYST CERTIFICATIONS ARE LOCATED IN APPENDIX 1**

# Executive Summary

---

## **The problem with conspiracies**

The problem with conspiracy theories or talk of price gouging is that it gives the oil companies far more control than they actually have. Certainly, during the recent run in crude oil and gasoline prices, the oil companies have become much more of price takers than price makers.

Part of the paradox of the oil markets has been the breakdown of expected elasticities and the emergence of reverse elasticities. Prior to joining Deutsche Bank in 2005, I was employed as a reservoir engineer at ExxonMobil. From my perspective on both sides of the table, we believe that both sides have got the oil price terribly wrong – with ExxonMobil doing a worse job of predicting the price of oil than Wall Street - but just barely.

Decades of low returns and underinvestment during the low oil price 1980's and 1990's has left the industry playing catch up, both in terms of resource under development and in terms of qualified personnel able to meet the new challenges. Higher prices, rather than increasing supply, has actually further constrained it. While new unconventional sources have become economic, resource nationalism around the globe has restricted International Oil Company access to less than 20% of the world's reserves and rising fiscal takes (including the US) has driven up the cost of doing business, or eliminated access all together in some cases. An incredibly tight global service and construction industry has further exaggerated both the cost and time of doing business.

Reverse elasticity of demand has also seen global demand increase with higher prices in major oil producing nations, driven by a combination of rapid demographic growth, subsidized oil prices and higher revenue in oil producing nations that allow governments to continue to provide cheap oil to local populations.

The resulting run up in the price of crude has driven up the price of gasoline as well, although not as much as one might expect. 2007 saw record refining margins as stretched US capacity, operational outages, strong demand and legislative mandates pushed inventories to recent lows. We testified last year that high gasoline prices would cure high gasoline prices, and weakening demand *has* proved to minimize the damage to the American consumer this year. When we broke \$3.00/gal gasoline in 2007, crude oil cost \$1.58/gal, with refining margins adding an additional \$0.83/gal and taxes making up the other \$0.60/gal. Today, crude oil is priced at \$2.85/gal, with refining margins making up only \$0.18/gal and tax the remainder. At times, gasoline has been manufactured for free.

Diesel, which has typically priced at a discount to gasoline, is subject to the same global supply trends as crude. The dieselization of the European automobile fleet has increased diesel demand relative to gasoline in recent years, while strong demand growth in developing nations has driven growth for both transport diesel as well as industrial users. US refining capacity, which is maximized to produce gasoline, not diesel, will respond with additional capital investment, but it will take time.

Efforts by the government to intervene typically have unintended consequences on all sides. In a tight global balance, the government through ULSD and ethanol has mandated tougher-to-make fuels, requiring more refining and plant maintenance. Suggestions for windfall profit taxes would further raise the cost of supply, while a suspension of the gasoline tax in summertime

would only serve to artificially increase demand for gasoline (the wrong solution) while robbing the government of infrastructure revenue.

Ethanol is not a solution. The ethanol “methadone” simply subsidizes farmers to grow corn for ethanol using oil-based fertilizer driving oil-powered tractors and serves to make this economic using government/taxpayer’s money. Ultimately ethanol subsidy lowers the pump price of gasoline and effectively encourages the cheap gasoline addiction.

US policy makers must stop attempting to re-create a 20th century of abundant and cheap US gasoline, it is as dead as the geology that leaves no more cheap US oil. Avoid additional mandates and allow the market to direct capital towards the areas of tightness – in this case diesel capacity. It is vital to allow US gasoline prices to reflect the true cost of supply, which even now they arguably do not do (poor geopolitics, the suffering environment).

# Paradox, not conspiracy

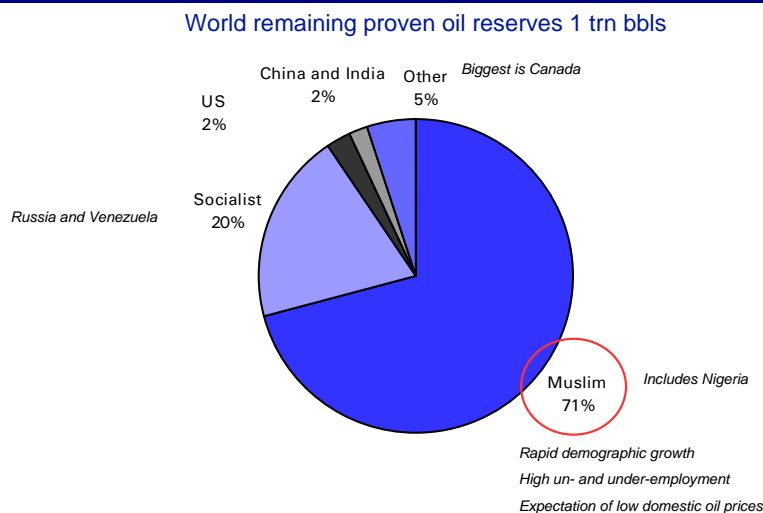
## The challenge of traditional elasticities

The problem with conspiracy theories is that it assumes that the oil companies are in control. However, the reality is that they have become more of price takers than price makers. The run up of crude oil prices over the past four years has dumped much of conventional economic wisdom on its head as higher prices have worked to lower supply and increase demand.

## Lower supply and higher demand

As oil prices have risen, so has the access of International oil companies to reserves decreased. Resource nationalism has cut off access to reserves in most of the Middle East, Russia and parts of South America. Empowered producing countries across the globe have re-written fiscal policy to receive a higher take, raising the cost of supply in the process. The US has not been immune, raising fiscal take, threatening windfall profit taxes and seeking to place ever more acreage out of reach of drilling.

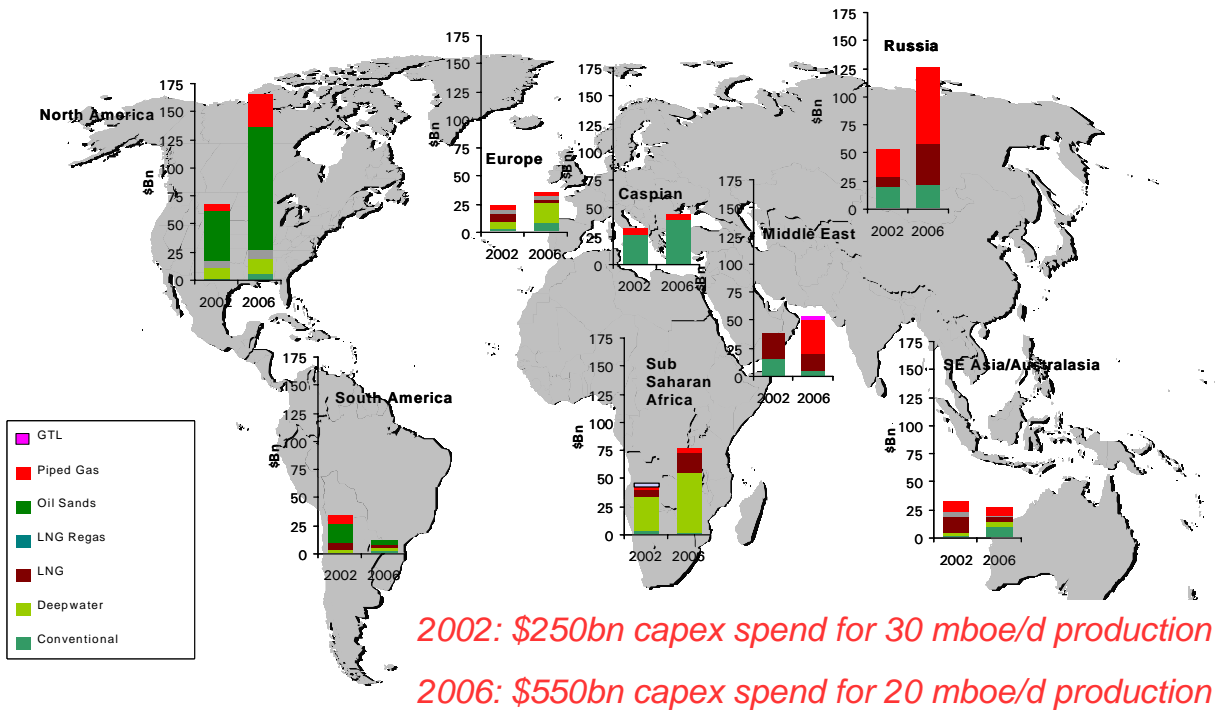
**Figure 1: Remaining global oil reserves by orthodoxy**



Source: BP, IMF, Deutsche Bank

While the oil and gas industry has significantly ramped up spending, both upstream and downstream, ability to reinvest is somewhat constrained. In addition to the resource nationalism mentioned above, a shortage of trained personnel has left the industry operating near the limits of its ability to reinvest capital, tougher geology is has left remaining reserves in ever more challenging and expensive locations, and a tight global service and construction industry has driven the cost of production to record levels. As a result, a rise in planned capital spending by the global integrated majors of 220% between 2002 and 2006, would develop 33% less total reserves – and it's only gotten worse.

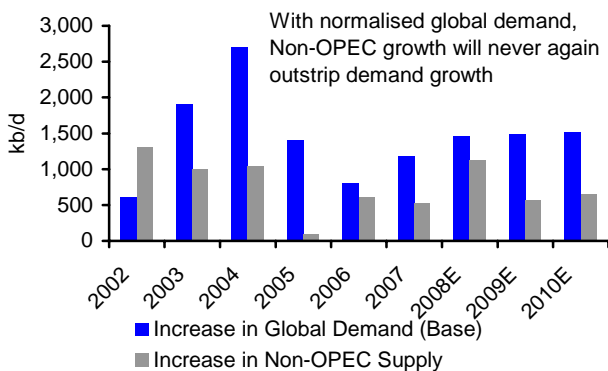
**Figure 2: Between '02 and '06, capex spend rose 220% to generate 33% less production**



Source: Deutsche Bank, Wood Mackenzie

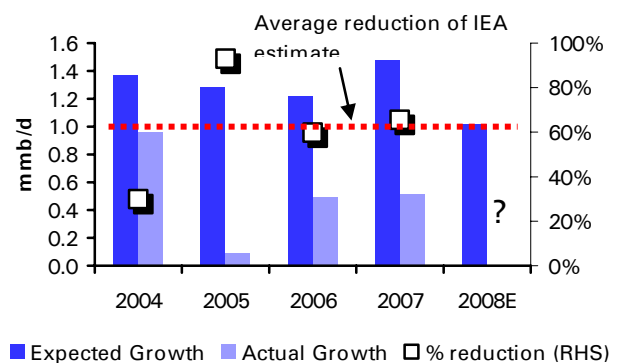
As a result, as a global economic boom, not least in China and India, has driven demand growth for all commodities, including oil, supply has an increasingly difficult time keeping up. Only once since 2000 has Non-OPEC supply growth exceeded demand growth. Despite robust forecasts for increasing supply, few believe the numbers. In recent years, growth has inevitably disappointed for a variety of the reasons cited above, with annual supply growth only averaging 40% of that forecasted a year earlier.

**Figure 3: Demand growth vs Non-OPEC supply growth**



Source: Deutsche Bank, IEA

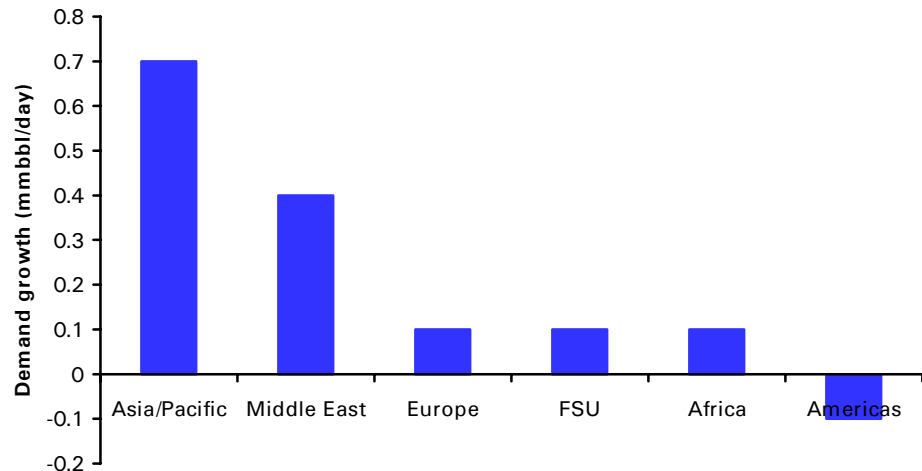
**Figure 4: Downgrades in Non-OPEC supply outlook**



Source: Deutsche Bank, IEA

The paradox of demand is that in much of the world, we have seen reverse elasticity with higher prices resulting in higher demand. Rapid demographic growth combined with subsidized prices and higher oil prices that allow governments to continue to provide cheap oil to local populations. It is no coincidence that nearly half of 2008 estimated demand growth will be from the Middle East, with the other half driven by China and India.

**Figure 5: Breakdown of 2008 estimated demand growth, YOY**



Source: IEA

While fundamentals are seen to be softening in the next couple of months, the steady stream of negative news on the supply side – declining production in Mexico, downgrades to Russian growth forecasts, Nigerian unrest, North Sea strikes, etc. – increase doubt that this looseness will materialize. This keeps spare capacity at uncomfortably low levels, increasing the risk priced into the commodity for future supply uncertainty (geopolitical, geologic, etc.).

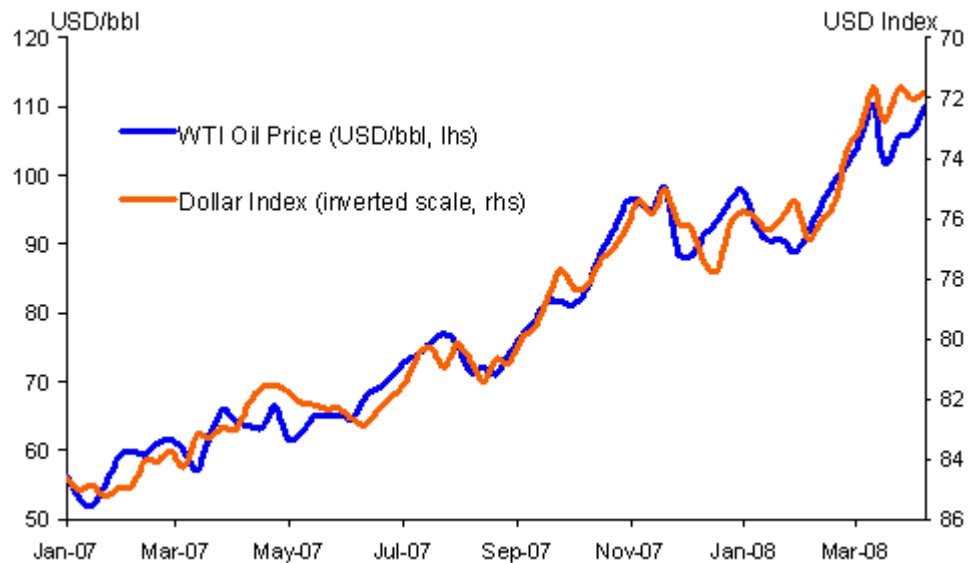
Longer term, the market is pricing in the inability of supply growth to meet the rising global demand. With supply challenged, the only solution is to increase the price to sufficient levels to destroy demand. In a country with a consumption problem, higher prices are your friend and more accurately reflect the true cost of energy supply (energy security, environmental, etc.).

The best thing the government can do is allow the markets to allocate capital effectively to adjust to current realities. US policy makers trying to re-create a 20<sup>th</sup> century of abundant and cheap US gasoline is a pipe dream, only serving to artificially increase the demand for gasoline, when it should be doing the opposite.

## The US dollar

Further aggravating the problem in the past year has been a slowing US economy and US fiscal/monetary policy that has put the US dollar in freefall, reaching a recent all-time low against the euro. While prices have dramatically increased 230% in the US since January 2007, the rest of the world has seen a much more muted rise. Producing nations, whose costs are often in euro with their revenue in dollars have seen their earnings power reduced, while investors have bought crude and other commodities as a hedge against inflation.

**Figure 6: US dollar vs. crude price**



Source: Deutsche Bank, Bloomberg

# Gasoline

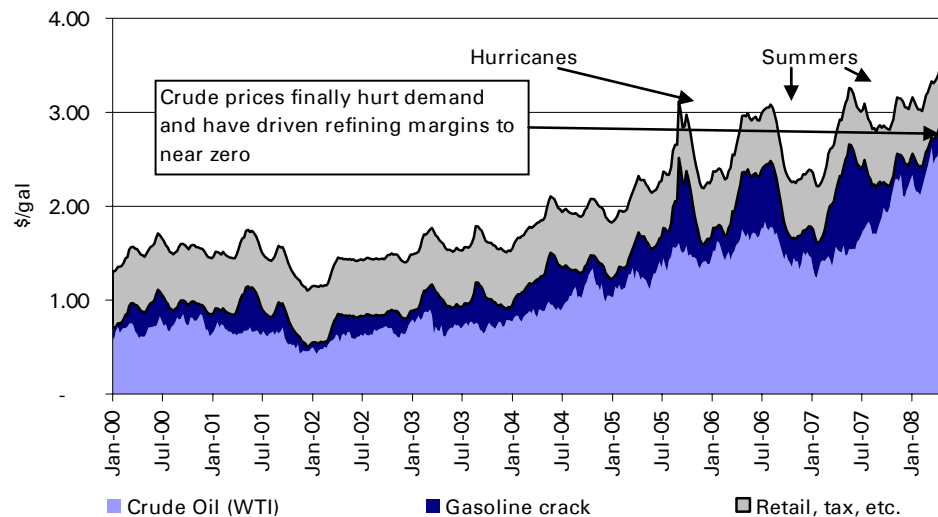
## It's the crude

Last year we testified before the Senate on the realities of the gasoline market. Despite cries of price gouging, a combination of continued demand strength, low inventories, and weak supply drove gasoline prices over \$3.00/gal. Some of this was the result of US government policies, which added additional complexity into an already stretched US refining system with the mandates of Ultra Low Sulfur Diesel and ethanol blending.

Despite the higher prices, we witnessed surprisingly little demand response over the past four years. In gasoline terms, we tested the equivalent of \$100/bbl crude oil at various points between 2005 and 2008, often driven by externalities such as hurricanes, refinery accidents or introduction of government mandates. The current combination of high prices and a slowing national economy are finally impacting demand, with current motor gasoline demand down nearly 1% vs. this time in 2007.

While weakening demand has helped to mitigate rising prices, the cost of crude oil has set the floor for gasoline pricing. When we broke \$3.00/gal gasoline in 2007, crude oil cost \$1.58/gal, with refining margins adding an additional \$0.83/gal and taxes making up the other \$0.60/gal. Today, crude oil is priced at \$2.85/gal, with refining margins making up only \$0.18/gal and tax the remainder – with refiners actually losing money with each barrel refined at times.

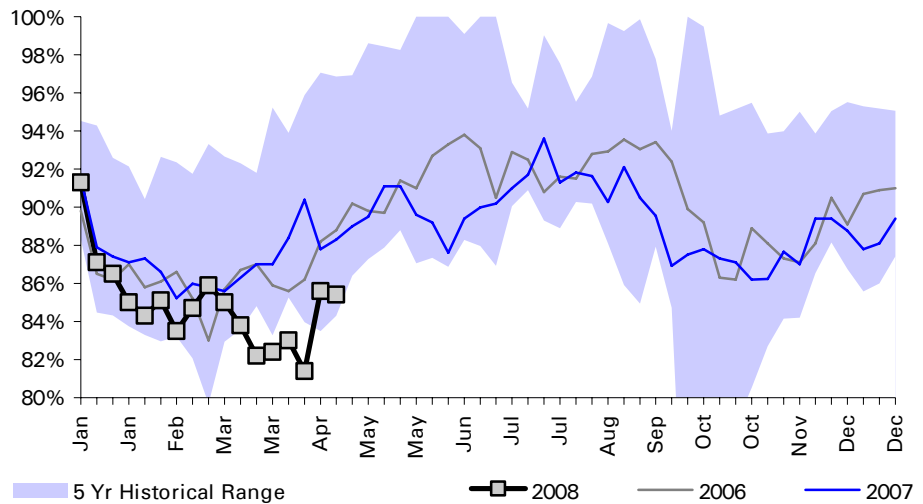
**Figure 7: Crude finally drives gasoline to a demand tipping point**



Source: Deutsche Bank

Although demand is falling, refining supply, which was uncharacteristically low in 2007 has remained low so far in 2008. Last year we testified that extended periods of maintenance – caused by tighter fuel specs, shortage of skilled contract workers and machinery pushed to the limit by strong demand – were partly to blame for the low utilization rates. Safety concerns in the wake of the Texas City disaster further contributed to a tightening of supply.



**Figure 8: US refinery utilization**

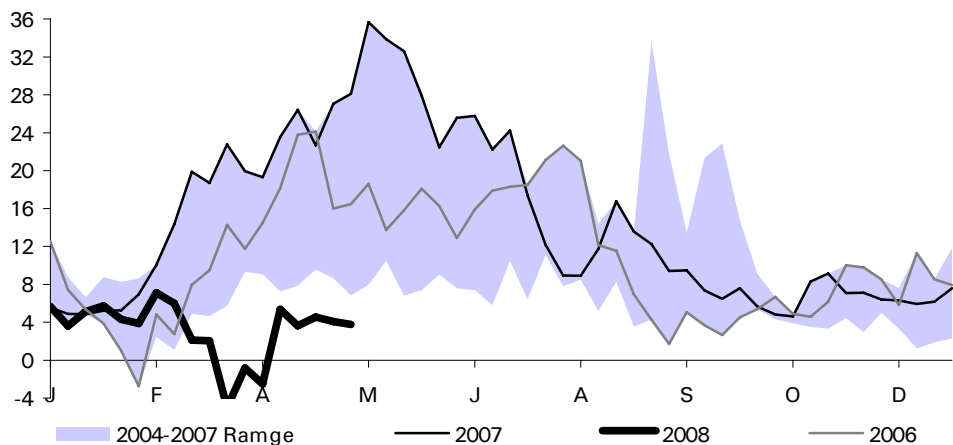
Source: US Department of Energy – Energy Information Agency, Deutsche Bank

This year, an additional factor has tightened supply: economics. Record crude prices and weakening demand in the US has created **NEGATIVE** gasoline margins at times over the last 3 months. This means that for each gallon of gasoline produced, *prior* to operating expense, a refiner is losing money. Pricing for bottom of the barrel products, such as asphalt and residual oil has been even worse.

**Figure 9: US Gulf Coast gasoline refining margin**

\$/bbl

NY Mogas Crack



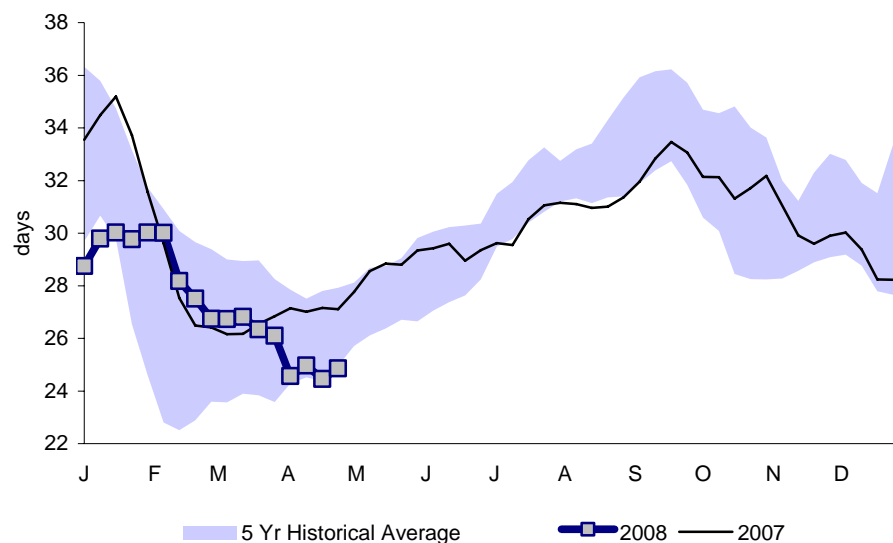
Source: Bloomberg, Deutsche Bank

# Why is diesel at a premium?

## Shifting trends in global growth

Diesel has historically traded at a discount to gasoline here in the US, driven primarily by much stronger demand for motor gasoline. However, recent global trends have pushed diesel to a premium to gasoline, a trend that is likely to hold for the foreseeable future. Again, this is the result of supply and demand. The dieselization of the automobile fleet in Europe has seen diesel demand significantly outpace that of gasoline. Strong growth in international economies, both in terms of transportation and industrial demand has exacerbated the balance. And while high prices have weakened consumer demand for gasoline here in the US, global industrial demand has remained relatively strong. The result has been a significant tightening in global diesel markets, drawing down US and other OECD nation inventories.

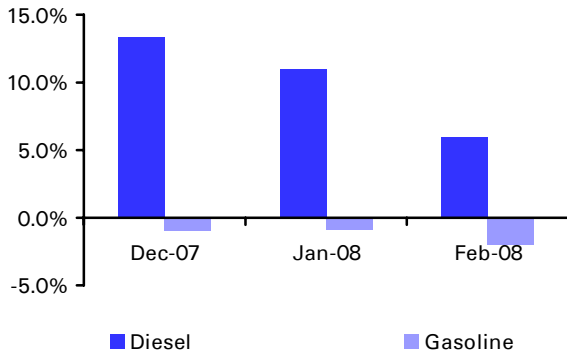
**Figure 10: US distillate demand days forward cover**



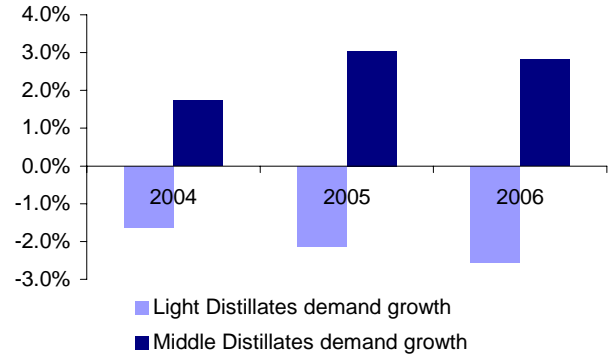
Source: US Department of Energy – Energy Information Agency, Deutsche Bank

The government mandated switch to Ultra Low Sulfur Diesel (ULSD), while not having a tremendous impact on supply, has certainly increased the cost of production and limited refinery flexibility in manufacturing product.

The dieselization of Europe, as well as the growing economies of developing nations around the world has driven strong growth in diesel demand. These nations tend to be structurally higher users of diesel relative to gasoline, both as part of the automobile and trucking fleets, as well as for power generation. Strong global demand, combined with a government enforced tightening of supply has pushed diesel prices to new highs relative to gasoline, with neither trend likely to be reversed any time soon.

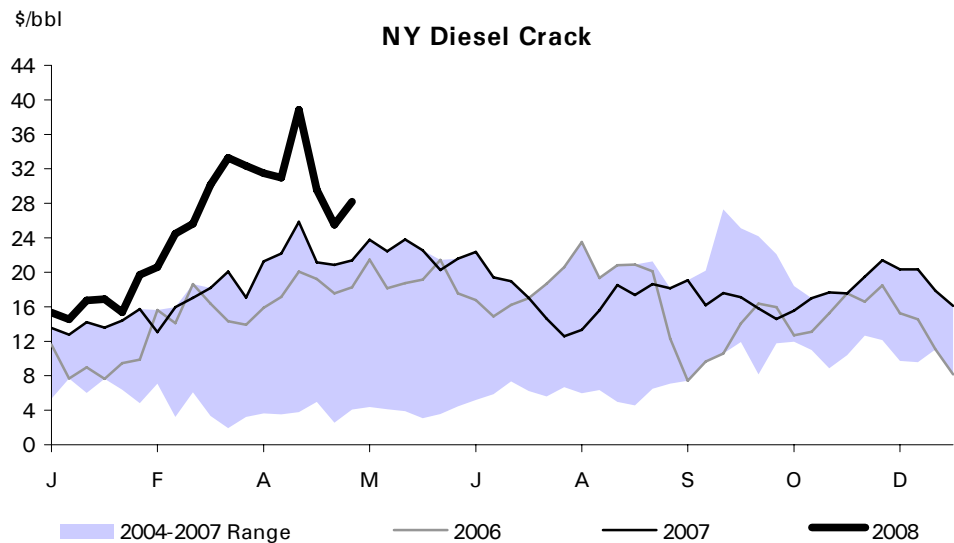
**Figure 11: US diesel demand outpacing gasoline**

Source: US Department of Energy – EIA, Deutsche Bank

**Figure 12: ...and Europe is even more pronounced**

Source: BP Statistical Review

As a result, diesel margins have been much stronger than historical averages.

**Figure 13: US Gulf Coast Diesel refining margin**

Source: Bloomberg, Deutsche Bank

As with all things, time and capital have a way of solving the problem. There is little that the industry can do in the short term, as refineries are maximizing their diesel production for obvious economic reasons. But, currently underway in the United States, and around the globe, refiners are investing to maximize diesel capacity (ie. Marathon's Garyville Refinery expansion).

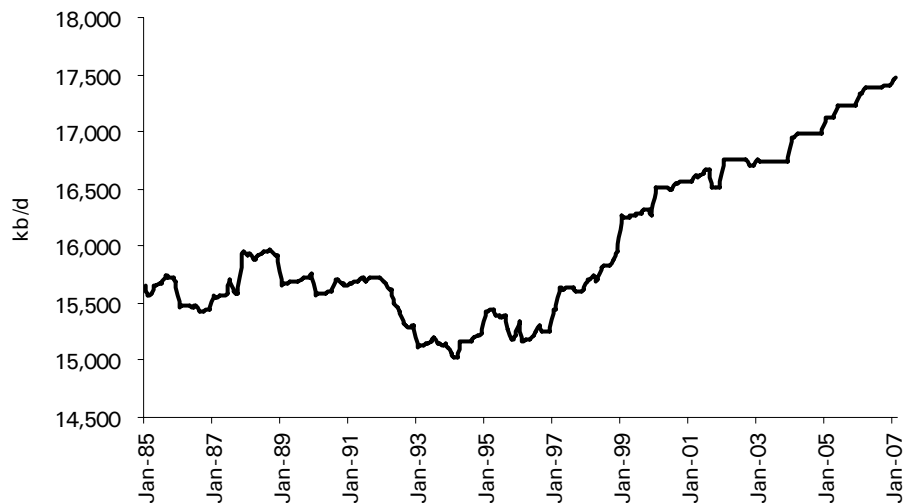
# Myths

There are three key myths for policy makers to keep in mind.

## **Myth: US refining capacity is not growing**

While a new refinery has not been built in this country for decades, plenty of refining capacity has been added. The chart below depicts US refining capacity, which has grown steadily since the mid-1990s. US refiners are adding capacity and have significant projects planned out into the next decade.

**Figure 14: US refining capacity**



Source: Department of Energy-Energy Information Agency, Deutsche Bank

## **Myth: High gasoline prices are bad**

Gasoline consumption is widely viewed as excessive on the basis of energy security and environmental concerns such as global warming. As discussed previously, over the long-term, the only proven effective way to slow gasoline (oil) consumption is through prices. Given this fact, high gasoline prices can be viewed as a friend to the policy maker.

## **Myth: High gasoline prices are caused by price gouging**

In a rising gasoline price environment, oil companies tend to lose money at the petrol pump, because cost of supply is outstripping price of sales. In fact, spectacular profits for gasoline marketing (the service station) are made in rapidly falling price environments. In neither case do we believe there is systematic price manipulation on the part of the major oil companies.

# Appendix 1

## Important Disclosures

Additional information available upon request

**For disclosures pertaining to recommendations or estimates made on a security mentioned in this report, please see the most recently published company report or visit our global disclosure look-up page on our website at <http://gm.db.com>.**

## Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst about the subject issuers and the securities of those issuers. In addition, the undersigned lead analyst has not and will not receive any compensation for providing a specific recommendation or view in this report. Paul Sankey

### Equity rating key

**Buy:** Based on a current 12-month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus projected dividend yield), we recommend that investors buy the stock.

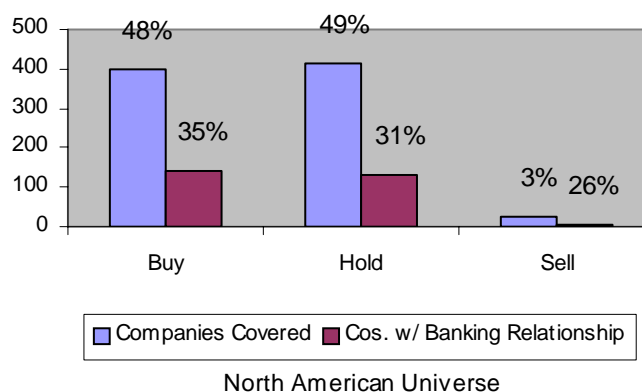
**Sell:** Based on a current 12-month view of total share-holder return, we recommend that investors sell the stock

**Hold:** We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.

### Notes:

- Newly issued research recommendations and target prices always supersede previously published research.
- Ratings definitions prior to 27 January, 2007 were:
  - Buy: Expected total return (including dividends) of 10% or more over a 12-month period
  - Hold: Expected total return (including dividends) between -10% and 10% over a 12-month period
  - Sell: Expected total return (including dividends) of -10% or worse over a 12-month period

### Equity rating dispersion and banking relationships



## Regulatory Disclosures

### SOLAR Disclosure

For select companies, Deutsche Bank equity research analysts may identify shorter-term trade opportunities that are consistent or inconsistent with Deutsche Bank's existing longer term ratings. This information is made available only to Deutsche Bank clients, who may access it through the SOLAR stock list, which can be found at <http://gm.db.com>

### Disclosures required by United States laws and regulations

See company-specific disclosures above for any of the following disclosures required for covered companies referred to in this report: acting as a financial advisor, manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/comanaged public offerings in prior periods; directorships; market making and/or specialist role.

### The following are additional required disclosures:

**Ownership and Material Conflicts of Interest:** DBSI prohibits its analysts, persons reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage.

**Analyst compensation:** Analysts are paid in part based on the profitability of DBSI, which includes investment banking revenues.

**Analyst as Officer or Director:** DBSI policy prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director, advisory board member or employee of any company in the analyst's area of coverage.

**Distribution of ratings:** See the distribution of ratings disclosure above.

**Price Chart:** See the price chart, with changes of ratings and price targets in prior periods, above, or, if electronic format or if with respect to multiple companies which are the subject of this report, on the DBSI website at <http://gm.db.com>.

### Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, in addition to those already made pursuant to United States laws and regulations.

**Analyst compensation:** Analysts are paid in part based on the profitability of Deutsche Bank AG and its affiliates, which includes investment banking revenues

**Australia:** This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act.

**EU:** A general description of how Deutsche Bank AG identifies and manages conflicts of interest in Europe is contained in our public facing policy for managing conflicts of interest in connection with investment research. Disclosures relating to the firm's obligations under MiFiD can be found at <http://globalmarkets.db.com/riskdisclosures>.

**Germany:** See company-specific disclosures above for holdings of five percent or more of the share capital. In order to prevent or deal with conflicts of interests Deutsche Bank AG has implemented the necessary organisational procedures to comply with legal requirements and regulatory decrees. Adherence to these procedures is monitored by the Compliance-Department.

**Hong Kong:** See <http://gm.db.com> for company-specific disclosures required under Hong Kong regulations in connection with this research report. Disclosure #5 includes an associate of the research analyst. Disclosure #6, satisfies the disclosure of financial interests for the purposes of paragraph 16.5(a) of the SFC's Code of Conduct (the "Code"). The 1% or more interests is calculated as of the previous month end. Disclosures #7 and #8 combined satisfy the SFC requirement under paragraph 16.5(d) of the Code to disclose an investment banking relationship.

**Japan:** See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

**New Zealand:** This research is not intended for, and should not be given to, "members of the public" within the meaning of the New Zealand Securities Markets Act 1988.

**Russia:** The information, interpretation and opinions submitted herein are not in the context of, and do not constitute, any appraisal or evaluation activity requiring a licence in the Russian Federation.

**South Africa:** Publisher: Deutsche Securities (Pty) Ltd, 3 Exchange Square, 87 Maude Street, Sandton, 2196, South Africa. Author: As referred to on the front cover. All rights reserved. When quoting, please cite Deutsche Securities Research as the source.

**Turkey:** The information, interpretation and advice submitted herein are not in the context of an investment consultancy service. Investment consultancy services are provided by brokerage firms, portfolio management companies and banks that are not

authorized to accept deposits through an investment consultancy agreement to be entered into such corporations and their clients. The interpretation and advices herein are submitted on the basis of personal opinion of the relevant interpreters and consultants. Such opinion may not fit your financial situation and your profit/risk preferences. Accordingly, investment decisions solely based on the information herein may not result in expected outcomes.

**United Kingdom:** Persons who would be categorized as private customers in the United Kingdom, as such term is defined in the rules of the Financial Services Authority, should read this research in conjunction with prior Deutsche Bank AG research on the companies which are the subject of this research. Disclosures relating to the firm's obligations under MiFiD can be found at <http://globalmarkets.db.com/riskdisclosures>.

## Deutsche Bank Securities Inc.

### North American locations

**Deutsche Bank Securities Inc.**  
60 Wall Street  
New York, NY 10005  
Tel: (212) 250 2500

**Deutsche Bank Securities Inc.**  
225 Franklin Street  
25th Floor  
Boston, MA 02110  
Tel: (617) 988 8600

**Deutsche Bank Securities Inc.**  
222 South Riverside Plaza  
30th Floor  
Chicago, IL 60606  
Tel: (312) 537-3758

**Deutsche Bank Securities Inc.**  
3033 East First Avenue  
Suite 303, Third Floor  
Denver, CO 80206  
Tel: (303) 394 6800

**Deutsche Bank Securities Inc.**  
1735 Market Street  
24th Floor  
Philadelphia, PA 19103  
Tel: (215) 854 1546

**Deutsche Bank Securities Inc.**  
101 California Street  
46th Floor  
San Francisco, CA 94111  
Tel: (415) 617 2800

**Deutsche Bank Securities Inc.**  
700 Louisiana Street  
Houston, Texas 77002

### International locations

**Deutsche Bank Securities Inc.**  
60 Wall Street  
New York, NY 10005  
United States of America  
Tel: (1) 212 250 2500

**Deutsche Bank AG London**  
1 Great Winchester Street  
London EC2N 2EQ  
United Kingdom  
Tel: (44) 20 7545 8000

**Deutsche Bank AG**  
Große Gallusstraße 10-14  
60272 Frankfurt am Main  
Germany  
Tel: (49) 69 910 0

**Deutsche Bank AG**  
Deutsche Bank Place  
Level 16  
Corner of Hunter & Phillip Streets  
Sydney, NSW 2000  
Australia  
Tel: (61) 2 8258 1234

**Deutsche Bank AG**  
Level 55  
Cheung Kong Center  
2 Queen's Road Central  
Hong Kong  
Tel: (852) 2203 8888

**Deutsche Securities Inc.**  
2-11-1 Nagatacho  
Sanno Park Tower  
Chiyoda-ku, Tokyo 100-6171  
Japan  
Tel: (81) 3 5156 6701

## Global Disclaimer

The information and opinions in this report were prepared by Deutsche Bank AG or one of its affiliates (collectively "Deutsche Bank") for its clients. The information herein is believed by Deutsche Bank to be reliable and has been obtained from public sources believed to be reliable. With the exception of information about Deutsche Bank, Deutsche Bank makes no representation as to the accuracy or completeness of such information.

This published research report may be considered by Deutsche Bank when Deutsche Bank is deciding to buy or sell proprietary positions in the securities mentioned in this report.

For select companies, Deutsche Bank equity research analysts may identify shorter-term opportunities that are consistent or inconsistent with Deutsche Bank's existing, longer-term Buy or Sell recommendations. This information is made available on the SOLAR stock list, which can be found at <http://gm.db.com>.

Deutsche Bank may trade for its own account as a result of the short term trading suggestions of analysts and may also engage in securities transactions in a manner inconsistent with this research report and with respect to securities covered by this report, will sell to or buy from customers on a principal basis. Disclosures of conflicts of interest, if any, are discussed at the end of the text of this report or on the Deutsche Bank website at <http://gm.db.com>.

Opinions, estimates and projections in this report constitute the current judgement of the author as of the date of this report. They do not necessarily reflect the opinions of Deutsche Bank and are subject to change without notice. Deutsche Bank has no obligation to update, modify or amend this report or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate, except if research on the subject company is withdrawn. Prices and availability of financial instruments also are subject to change without notice. This report is provided for informational purposes only. It is not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy in any jurisdiction or as an advertisement of any financial instruments.

The financial instruments discussed in this report may not be suitable for all investors and investors must make their own investment decisions using their own independent advisors as they believe necessary and based upon their specific financial situations and investment objectives. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the price or value of, or the income derived from, the financial instrument, and such investor effectively assumes currency risk. In addition, income from an investment may fluctuate and the price or value of financial instruments described in this report, either directly or indirectly, may rise or fall. Furthermore, past performance is not necessarily indicative of future results.

Derivative transactions involve numerous risks including, among others, market, counterparty default and illiquidity risk. The appropriateness or otherwise of these products for use by investors is dependent on the investors' own circumstances including their tax position, their regulatory environment and the nature of their other assets and liabilities and as such investors should take expert legal and financial advice before entering into any transaction similar to or inspired by the contents of this publication. Trading in options involves risk and is not suitable for all investors. Prior to buying or selling an option investors must review the "Characteristics and Risks of Standardized Options," at <http://www.optionsclearing.com/publications/risks/riskchap1.jsp>. If you are unable to access the website please contact Deutsche Bank AG at +1 (212) 250-7994, for a copy of this important document. Furthermore, past performance is not necessarily indicative of future results. Please note that multi-leg options strategies will incur multiple commissions.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction. In the U.S. this report is approved and/or distributed by Deutsche Bank Securities Inc., a member of the NYSE, the NASD, NFA and SIPC. In Germany this report is approved and/or communicated by Deutsche Bank AG Frankfurt authorised by Bundesanstalt für Finanzdienstleistungsaufsicht. In the United Kingdom this report is approved and/or communicated by Deutsche Bank AG London, a member of the London Stock Exchange and regulated by the Financial Services Authority for the conduct of investment business in the UK and authorised by Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin). This report is distributed in Hong Kong by Deutsche Bank AG, Hong Kong Branch, in Korea by Deutsche Securities Korea Co. and in Singapore by Deutsche Bank AG, Singapore Branch. In Japan this report is approved and/or distributed by Deutsche Securities Inc. The information contained in this report does not constitute the provision of investment advice. In Australia, retail clients should obtain a copy of a Product Disclosure Statement (PDS) relating to any financial product referred to in this report and consider the PDS before making any decision about whether to acquire the product. Deutsche Bank AG Johannesburg is incorporated in the Federal Republic of Germany (Branch Register Number in South Africa: 1998/003298/10) Additional information relative to securities, other financial products or issuers discussed in this report is available upon request. This report may not be reproduced, distributed or published by any person for any purpose without Deutsche Bank's prior written consent. Please cite source when quoting.